

BYPASS CAPACITOR EMBEDDED FLIP CHIP PACKAGE LID AND STIFFENER

ABSTRACT OF THE DISCLOSURE

5 The present invention provides a heat spreader with a bypass capacitor to provide substantially instant power and/or to control simultaneous switching noise (SSN). The present invention also provides a semiconductor device package incorporating this heat spreader. In addition, fabrication methods for such heat spreaders and packages are provided. Generally, the heat spreaders and packages of
10 the present invention include an embedded bypass capacitor that can provide decoupling capacitance in order to deliver near instant power to the die and/or minimize SSN. In a preferred embodiment, the embedded bypass capacitor is connected to terminals integrated with the heat spreader (e.g., lid; stiffener) and/or to a package plane (e.g., power plane or ground plane) in the package substrate for
15 connection via the flip chip package's power delivery system to a power source and/or component.